RIGGS, ABNEY, NEAL, TURPEN, ORBISON & LEWIS
A PROFESSIONAL CORPORATION
ATTORNEYS AND COUNSELORS AT LAW
FRISCO BUILDING
502 WEST SIXTH STREET
TULSA, OKLAHOMA 74119-1010
(918) 587-3161
Fax (918) 587-9708

June 13, 2008

VIA EMAIL: (Michael.Bond@KutakRock.com)

Michael R. Bond, Esq.
Kutak Rock LLP
The Three Sisters Building
214 W. Dickson Street
Fayetteville, AR 72701-5221

Re: Tyson Request for Production of Documents Concerning Modeling Documents

Dear Michael:

This letter is written pursuant to our recent emails and telephone calls and in particular in response to the email you sent on May 30, 2008 (see attached). Based on our discussions, I understand that you wanted supplemental responses to Defendant Tyson Foods, Inc.'s April 17, 2008 Requests for Production to Plaintiff's ("Model RFPs") and that you wanted these supplemental responses to identify responsive documents by each separate request for the water quality models used by Drs. Engel and Wells. As noted below, these materials were produced as part of their considered materials along with their expert reports. The models were not disaggregated – all model runs were produced as kept in their respective directory/folder as they were stored on the expert's computers so that any experienced WQ Modeler should be able to run them as they were used by the experts.

The following should answer your questions regarding the Model RFPs and your May 30th email.

Request for Production No. 1: Please produce all Models relating to the IRW created in connection with this matter and/or which you intend to rely upon in this matter.

Supplemental Response to Request No. 1:

Dr. Engel's Models: Dr. Engel used two (2) models. The LOADEST Model and Model documentation was provided in his expert considered materials under the

file folder named "y:\Engel\Materials\il__river__note\loadest\LOADEST\folder". The GLEAMS model and model documentation was provided in his expert considered materials in the folder "y:\engel\Materials\GLEAMS\Model\Source Code\folder". The GLEAMS executables are also in each of the scenario sub watershed folders described in the Supplemental Response to Request No. 2 (below). The routing equations are described in Appendix D to Dr. Engel's Expert Report at pp D-20 – D-22.

Dr. Well's Model: The model used by Dr. Wells is the CE-QUAL-W2 which can be downloaded from http://www.cee.pdx.edu/w2. This was mentioned on p. 5 of Dr. Wells, Expert Report.

All of the files used by Dr. Wells in the model set-up, calibration and scenario runs were provided as part of Dr. Wells considered materials. The files used for modeling were from 3 different computers each of which were doing similar processing tasks. Hence, there may be some duplication among the files. The model includes the model executable, the model source code, all input files, all output files, and all processing programs/codes/procedures used for the input and output from the model.

The specific file names that are responsive to Request No. 1 are: "50yr.zip", "50yrmoratorium.zip", "50yrmoritoriumsod=0.1-0046.zip", "50yrmoratoriumsoddecline0046.zip", "50yrnatural.zip", "97-06 Data.zip", "98-07 Data.zip", "Model_calibration.zip", "model-calib-updates.zip", "Source code.zip", and "W2 Model-updates.zip"

Request for Production No. 2: Please produce all input files used in the Models.

Supplemental Response to Request No. 2:

Dr. Engel's Models:

For the GLEAMS Model the "y:\Engel\Materials\GLEAMS_Final\" folder contains a series of folders (see list below) for model scenarios described in the Dr. Engel's Expert Report. Each scenario folder contains a folder for each of the subwatersheds modeled (Illinois River to Tahlequah, Baron Fork near Eldon, and Caney Creek). Within each of these folders are a series of GLEAMS input files - ".par" files:

"1.1.FUTURE_100YR" – continued poultry waste application
"1.1.FUTURE_100YR_LanuseChange" – continued poultry waste application and hay (no cattle) (data processing not completed and not discussed in Engel report)
"1.1.FUTURE_100YR_NOLitter" – poultry waste application cessation
"1.1.FUTURE_100YR_NOLitter_HRU" - poultry waste application cessation
"1.2.FUTURE_50YR_GrowthPoultry" – poultry waste application with growth in poultry industry

"1.4FUTURE_50YR_NOAPPLICATION" – poultry waste application cessation
"2.LAST_50YR_CLEANSOIL" – no poultry waste ever applied and background STP
"2.LAST_50YR_variable Litter"– 1950-1999 poultry waste land application
"3.FrancisLake" – continued poultry waste application – results to Lake Francis
"GLEAMS" – supporting input files and data for model calibration

The original data from which all input files were created is still available in the GIS data layers, raw weather files, and Dr. Engel's Expert Report.

For the LOADEST Model: y\Engel\Materials\il_river_note\loadest\LOADEST\" folder contains some of the LOADEST input files to compute P loads (Total and Soluble) at Tahlequah, Baron Fork near Eldon, and Caney Creek. The data in these files was derived from flow and P concentration data in spreadsheets described in Section 9 of Dr. Engels's Expert Report. Due to the large number of input files, some of these were overwritten by Dr. Engel during the use of LOADEST. Thus not all input files may be in this folder. The original data is still available in the spreadsheets referenced in Section 9 of Dr. Engel's Expert Report. Thus, these input files can be created as needed.

The "2input\routing.xls" file contains data for optimizing parameters for the routing equations as set forth in Dr. Engel's Expert Report on page D-22.

Dr. Wells' Model:

The input files are included in each model directory. For example, there are calibration run directories that include all input files for that calibration run. There are also model scenario run directories that include all input files for that scenario run. Again, as an example, the 50-year simulation for the "base" scenario includes all input files for that scenario. These are found in the file named "50yr.zip". For model calibration, the runs are separated into run directories. Therefore, all input files are located within a directory with the title: "Run#". In the zip file, "Model calibration.zip", you will find all the input files for the model run. In order to find these input files, sort by file type. For the CE-QUAL_W2 model all input files use the file type "npt".

The specific file names that are responsive to Request No. 2 are: "1998-07Data(VW).zip", "1998-2007.zip", "50yr.zip", "50yrmoratorium.zip", "50yrmoritoriumsod=0.1-0046.zip", "50yrmoratoriumsoddecline0046.zip", "50yrnatural.zip", "97-06 Data.zip", "98-07 Data.zip", "Model_calibration.zip", "model-calib-updates.zip", and "W2 Model-updates.zip".

Request for Production No. 3: Please produce all output files used in the Models.

Supplemental Response to Request No. 3:

Dr. Engel's Models:

For the GLEAMS model, the "y:\Engel\Marerials\GLEAMS_Final\" folder contains a series of folders for model scenarios (see Supplemental Response to Request No. 2 (above) for list of folders) that are described in the Dr. Engel's Expert Report. Each scenario folder contains a folder for each of the subwatersheds modeled (Illinois River to Tahlequah, Baron Fork near Eldon, and Caney Creek). Within each of these folders are a series of GLEAMS output files (".out" files).

For the LOADEST model, the "y:\Engel\Materials\il_river_note\loadest\LOADEST\" folder contains the LOADEST output files with P loads (Total and Soluble) at Tahlequah, Baron Fork near Eldon, and Caney Creek. Due to the number of output files, some of these were overwritten and/or removed once summarized during the use of LOADEST. These files are readily reproduced from the original data referenced in the Supplemental Response to Request No. 9.

Dr. Wells' Model:

All output files were provided in the same directory as the run directory except for files that were further post-processed. For the calibration models these are included in the zip file "Model calibration.zip" in the subdirectory with the associated Run#, such as "Run147". For the scenario simulations, the output files are found in their respective scenario zip file, such as "50yr.zip" for the base case, "50yrmoritorium" for the cessation case with no change in SOD, etc. All of the scenerios are identified in Dr. Wells' Expert Report. In order to find these input files, sort by file type. For the CE_QUAL_W2 model all output files use the file type "opt".

The specific file names that are responsive to Request No. 3 are: "1998-2007.zip", "50yr.zip", "50yrmoratorium.zip", "50yrmoritoriumsod=0.1-0046.zip", "50yrmoratoriumsoddecline0046.zip", "50yrnatural.zip", "97-06 Data.zip", "98-07 Data.zip", "Model_calibration.zip", "model-calib-updates.zip", and "W2 Model-updates.zip".

Request for Production No. 4: Please produce all computer codes used in the Models.

Supplemental Response to Request No. 4:

Dr. Engel's Models:

For the LOADEST model the source code is provided in the folder "y:\Engel\Materials\il_river_note\loadest\LOADEST\source\" .

For the GLEAMS model the source code is provided in the folder "z:\Engel\Materials\GLEAMS\Model|SourceCode\". The source code for GLEAMS is provided in each of the scenario subwatershed folders (see Supplemental Response to Request No. 2 (above) for list of folders) modified to allow runs for more years.

Dr. Wells' Model:

The model source code is included in the zip file called "source code.zip" and is also found on the Portland State University website: "http://www.cee.pdx.edu/w2 for Version 3.6". The model use Fortran90/95/2000 programming language and the IVF10.1 Fortran90 compiler. For post and pre-processing codes, the Fortrn90 compiler used was the CVF6.6c and the IVF10.1 compilers.

All preprocessing computer codes are in the respective directories where the preprocessing toke place. For example, in the zip file "Temperature inflows from met data.zip" the computer codes are found that were used in the processing of the meteorological data to obtain the input temperature time series. These codes can be found by sorting on the file type "f90".

All post-processing computer codes are in the respective directories where the post-processing takes place. For example, in the analysis of the base case scenario in the file "Tenkiller-postprocessing50yr.zip" the computer codes are in the subdirectory "50yrgrowth" for the growth scenario, etc. Many of the base codes for post-processing the scenarios are in the "50yr" subdirectory and have the file type "f90".

The specific file names that are responsive to Request No. 4 are: "1998-2007.zip", "50yr.zip", "50yrmoratorium.zip", "50yrmoritoriumsod=0.1-0046.zip", "50yrmoratoriumsoddecline0046.zip", "50yrnatural.zip", "97-06 Data.zip", "98-07 Data.zip", "bathymetry.zip", "Boundry Conditions-Processing(VW).zip", "InLake WQ(VW).zip", "input temp time series 10 yr period.zip", "Met Data-Graphs(VW).zip", "met data.zip", "Model Bathymetry_Setup(VW).zip", "Source code.zip", "Temperature inflows from met data.zip", "Model_calibration.zip", "model-calib-updates.zip", "W2 Model-updates.zip", "WaterLevel_Flow Files(VW).zip" and "wq, flow, water level data.zip".

Request for Production No. 5: Please produce all pre-processing computer programs, functions and procedures used.

Supplemental Response to Request No. 5:

Dr. Engel's Models:

The weather pre-processing code is located in "y:\Engel\Materials\GLEAMS\Data\WEATHER_PRE\". No other pre-processing computer programs, functions or procedures were used.

Dr. Wells' Model:

All FORTRAN codes were written in Fortran90/95/2000. Also, macros were developed for Tecplot10 with the file type "LAY"; templates for graphing were developed for the program GRAPHER7 with the file type "GFR". In many of the directories there are also spreadsheets using EXCEL2007 with the file type "XLXS". These files are embedded in the directories where the pre-processing zip took place.

The specific file names that are responsive to Request No. 5 are: "1998-07 Data(VW).zip", "bathymetry.zip", "Boundry Conditions-Processing(VW).zip", "InLake WQ(VW).zip", "input temp time series 10 yr period.zip", "Met Data-Graphs(VW).zip", "Met data.zip", "Model-Setup-bathymetry.zip", "Model Bathymetry_Setup(VW).zip", "Temperature inflows from met data.zip", "WaterLevel_Flow Files(VW).zip" "Boundry Conditions-Processing(VW).zip" "WaterLevel_Flow Files(VW).zip" and "wq, flow, water level data.zip".

Request for Production No. 6: Please produce all post-processing computer programs, functions and procedures used.

Supplemental Response to Request No. 6:

Dr. Engel's Models:

In each GLEAMS scenario and subwatershed folder, there is post-processing code (yearlytp.exe) to compile the GLEAMS model outputs.

Dr. Wells' Model:

All FORTRAN codes used for post-processing are included in the file directories where the model results were post-processed. Hence in the file "model calibration.zip", there is a subdirectory "postprocessing" that includes executables and source codes written in Fortran90/95/2000. Also, included in each directory where post-processing occurred were macros using Tecplot10 with the file type "LAY"; graph templates for using the program GRAPHER7 with the file type "GFR", and EXCEL2007 files with the file type "XLXS".

The specific file names that are responsive to Request No. 6 are: "MODEL Calibration.zip", "Calibration Run Data.zip", "Misc Graphics-Presentations(VW).zip", "Post processing-50-yr(VW).zip", "Post processing-50-yr-runs.zip", "TemperatureModeling(VW) .zip", "Tenkiller-postprocessing50yr.zip", and "Updates(VW).zip".

Request for Production No. 7: Please produce all computer programs, functions and procedures used.

Supplemental Response to Request No. 7:

Dr. Engel's Models:

See Supplemental responses to Requests 1, 4, 5, and 6. GLEAMS optimization – code and executables for optimization of GLEAMS parameters can be found in each of the scenario and subwatershed subdirectories is described in the Supplemental Response to Request No. 2. Input parameters were optimized using the automated Shuffled Complex Evolution approach.

Routing equation optimization – code and executables for optimizing parameters for the routing equations is located in "y:\Engels\materials\GLEAMS_Final\Lake\" within subdirectories for each watershed.

The GIS data used are in the "y:\Engel\Materials\GLEAMS\GIS\CoreData\" folder.

Dr. Wells' Model:

See Supplemental responses to Requests 1, 4, 5, and 6.

Request for Production No. 8: Please produce all primary data used for comparison with the Model's input files.

Supplemental Response to Request No. 8:

Dr. Engel's Models:

The GIS data used are in the "y:\Engel\Materials\GLEAMS\GIS\CoreData\" folder.

The weather data used are in the y:\Engel\Materials\GLEAMS\Data\WEATHER\"folder.

Soil attributes from STATSGO are available in "y:\Engel\Materials\GLEAMS\Statsgo\".

Other model inputs and the underlying data are described in Dr. Engel's Expert Report.

Dr. Wells' Model:

Primary data used to develop the model input files are found at: "1998-07 Data(VW).zip", "bathymetry.zip", "Boundry Conditions-Processing(VW).zip", "InLake WQ(VW).zip", "input temp time series 10 yr period.zip", "Met Data-Graphs(VW).zip", "Met data.zip", "Model Bathymetry_Setup(VW).zip", "Temperature inflows from met data.zip", "Model-Setup-bathymetry.zip", "WaterLevel_Flow Files(VW).zip" and "wq, flow, water level data.zip".

Request for Production No. 9: Please produce all primary data used for comparison with the Model's computations.

Supplemental Response to Request No. 9:

Dr. Engel's Models:

USGS flow data for the Tahlequah, Baron Fork and Caney Creek locations are provided in spreadsheets in 9data: Baron.xls – 1997-2006 flow data; Caney.xls – 1997-2006 flow data; Tahlequah.xls – 1997-2006 flow data; Tahlequah_50-present.csv – 1950 through early 2008 flow data; Baron_50-present.csv - 1950 through early 2008 flow data.

Phosphorous concentration data from USGS and OWRB are provided in spreadsheets in 9data: Baron.xls – 1997-2006 flow data; Caney.xls – 1997-2006 flow data; Tahlequah.xls – 1997-2006 flow data.

Dr. Wells' Model:

The files which were compared to model results are located in all post-processing subdirectories referenced in Supplemental Response to Request No. 6. Included in these directories are post-processing programs/macros/templates, model output, and primary field data used in model-data comparisons. Generally, the primary data have the file type "DAT" and "TXT" and are read in by post-processing programs, graphing packages, macros, and templates as described in the Supplemental Response to Request No. 6.

The specific file names that are responsive to Request No. 9 are: "InLake WQ(VW).zip", "Model calibration.zip", "Calibration Run Data.zip", "Post processing-50-yr(VW).zip", "Post processing-50-yr-runs.zip", and "Updates(VW).zip".

I believe these responses provide all the detail needed to identify documents responsive to the Requests, and should be a sufficient guide for an experienced water quality modeler to run the models of Drs. Engel and Wells. As noted above, the modeling files for these experts were not "disaggregated" - they were produced as part of the expert's considered files in the same form as they are found on the expert's computer. Please call if you have any questions.

Sincerely,

David P. Page

David Page

From: Bond, Michael R. [Michael.Bond@KutakRock.com]

Sent: Friday, May 30, 2008 4:14 PM

To: David Page; robert.george@tyson.com; Jay Jorgensen

Cc: Kelly.Burch@oag.ok.gov; lbullock@bullock-blakemore.com; David Riggs; Baker, Fred; Ward, Liza; Bob Nance; Richard Garren; Xidis, Claire; Bob Nance

Subject: RE: Tyson RFP Concerning Modeling Documents

David, per your suggestion on our call on Wednesday I have discussed with our experts what they need with respect to Plaintiffs' Models. First and foremost they need a working copy of each of the Models utilized by your experts. In layman's terms they need the working version of the Models that Plaintiffs' experts actually sat down and used. This is covered under Tyson Foods, Inc. April 17, 2008 Request for Production No. 1.

Additionally the following information must be provided.

- Model code files required to create all model executable files
- Model code compilation files and full documentation of the compilation options/specifications
- Model executables required to run the models for all applications included in the expert reports
- Model input and output files for the model calibrations
- Model input and output files for the model validations
- Model input and output files for all sensitivity and uncertainty analyses conducted
- Model input and output files for all forecast scenarios
- Pre-processors used for all model inputs including: source codes, compilation options, executables, and all databases/spreadsheets required for pre-processing of the model inputs
- Processors used for model calibration and validation data including: source codes, compilation options, executables, databases, and spreadsheets
- Post-processors used for model outputs including: source codes, compilation options, and executables
- Databases/spreadsheets required to conduct post-processing of model output for calibration, validation, uncertainty/sensitivity analysis, and forecast scenarios
- Post-processed files from all model runs including calibration, validation, sensitivity/uncertainty analysis, and forecast scenarios
- Text files, databases and spreadsheets used for evaluating and presenting results from these post-processed files

All of the above information is covered by the April 17, 2008 Requests for Production and must be produced. At this time I have not been provided with all the requested information. Please advise as to when you intend to

complete this production.

Michael R. Bond
Kutak Rock LLP
The Three Sisters Building
214 West Dickson Street
Fayetteville, AR 72701-5221
Main Telephone: (479) 973-4200
Direct: (479) 695-1946
Mobile: (479) 236-0063
Facsimile: (479) 973-0007
Email: michael.bond@kutakrock.com
www.kutakrock.com

From: David Page [mailto:dpage@riggsabney.com]
Sent: Thursday, May 29, 2008 8:12 AM
To: Bond, Michael R.; robert.george@tyson.com
Cc: Kelly.Burch@oag.ok.gov; lbullock@bullock-blakemore.com; David Riggs; Baker, Fred; Ward, Liza; Bob Nance; Richard Garren; Xidis, Claire; Bob Nance
Subject: Tyson RFP Concerning Modeling Documents

Pursuant to our call yesterday, I can confirm that all of the "documents" responsive to the above referenced request for production (RFP) concerning the modeling information should be included in the "considered materials" produced with Dr Engel's and Dr Wells' expert reports. In order to hopefully avoid any confusion as to which of the considered documents are responsive to each individual request, next week, I will prepare a supplemental response to these requests that will include a separate production, (that we believe is a duplicate of the items produced in the considered materials) on discs or DVDs that will separately identify and include (by file name on the disc and by RFP number) the requested documents that the State or its experts (Engel and Wells) have that are responsive to each of your RFPs.

Please call if you have any questions.

Thanks, David.

David P. Page
Riggs, Abney, Neal, Turpen, Orbison & Lewis, Inc.
502 W. 6th Street
Tulsa, OK 74119-1010
918-587-3161
918-583-1549 (fax)
dpage@riggsabney.com

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